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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/796,531  | 03/09/2004  | Ying Tang            | ARTI-0001B                  | 2022             |
| 27964   | 7590        | 10/25/2006           | EXAMINER                    |                  |
| HITT GAINES P.C.<br>P.O. BOX 832570<br>RICHARDSON, TX 75083 |             |                      | WYROZEBSKI LEE, KATARZYNA I |                  |
|   |             |                      | ART UNIT                    | PAPER NUMBER     |

1714

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/796,531

Applicant(s)

TANG, YING

Examiner

Katarzyna Wyrozewski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/29/04; 3/9/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-20 rejected under 35 U.S.C. 102(a) as being clearly anticipated by TANG (US 6,590,042).

Already patented invention teaches recycling of waste rubber using accelerators, activators and other agents as required by the present invention.

3. Claims 1, 6, 7, 11, 16, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by SEKHAR (US 5,770,632).

The prior art of SEKHARD discloses process for recycling waste rubber and additives such as accelerators or activators that facilitate cleavage of S-S bonds.

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The accelerators of SEKHAR are selected from thiocarbamates, zinc salts of dialkyl dithiophosphates, 2-mercaptobenzothiazoles or derivatives thereof, thiurams, guanadines, sulphenamides and the like (Abstract). The two accelerators are utilized in a ratio of 1:1 to 1:12. First accelerators are thiocarbamates. Second group of accelerators is selected from mercaptobenzothiazoles or sulphenamides such as N-t-butyl-2-benzothiozole sulphenamide. Additional accelerators from the list in col. 2 and 3 can also be utilized.

Additional components of the prior art of SEKHAR include activator zinc oxide and retarder that is stearic acid. One example of the amounts of these two additives are set forth in Example 1, wherein zinc oxide is utilized in 2 pbw and stearic acid is utilized in 2 pbw.

In the process of SEKHAR, the waste rubber is first comminuted into a rubber crumb in order to make the process more efficient and to increase the surface area of the waste rubber that will be recycled. The temperature during the process is 70°C and the additives comprising accelerators and activators are added while in a mill.

In the light of the above disclosure the prior art of SEKHAR anticipates claims rejected above.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1, 4-7, 9, 11, 14-17, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over SEKHAR (US 5,770,632) in view of ALSDORF (US 6,924,319).

The discussion of the disclosure of the prior art of SEKHAR from paragraph 3 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of SEKHAR is showing that derivatives of the compounds utilized that include zinc salts can equally be utilized in the devulcanization process.

The prior art of ALSDROF discloses process for devulcanization of rubber composition utilizing accelerators, activators and retarders.

Accelerators can be either one of combination thereof (col. 3 and 4). Activator for the two accelerators is zinc oxide (col. 5). Stearic acid or zinc stearate (col. 3 and 5) is utilized

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because it retards the later vulcanization but at the same time it is also an activator when in combination with zinc oxide.

The prior art of SEKHAR teaches use of accelerators as well as their derivatives in order to cleave S-S bonds. The prior art of ALSDORF shows further the equivalency not only between the accelerators but also between stearic acid and its zinc salt.

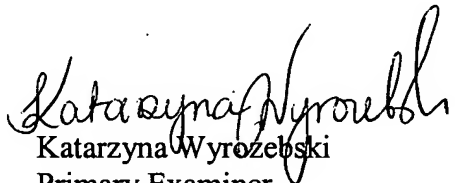
In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art to utilize the components in the disclosure of SEKHAR or its derivatives and thereby arrive at the present invention. The devulcanization process will not depend on the fact that the compound is a zinc salt but on its functionality such as sulphide, benzothiazole, mono or disulphides or carboxylic acid. Therefore utilizing derivatives of these compounds would still devulcanize rubber composition.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Katarzyna Wyrozebski  
Primary Examiner  
Art Unit 1714

October 23, 2006